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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Sergey Nikolayevich Kharchenko

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EXAMINER

BODDIE, WILLIAM

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/069,693	Applicant(s) KHARCHENKO ET AL.	
	Examiner William L. Boddie	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-32 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-32 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date. ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. In a preliminary amendment, dated February 21st, 2002, the Applicant cancelled claims 1-16 and added new claims 17-32. Currently claims 17-32 are pending.

Claim Objections

2. Claim 21 is objected to because of the following informalities: claim 21 currently states that the carrier and balancer are additionally furnished with "point light sources on their interior which *f*aces the drive shaft axis." This is incorrect grammatically.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 18, 24-25 and 28-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18, specifically does not sufficiently define the mathematical equations which govern the construction of the device. It appears the Applicant intended to the equations to be identical to those discussed in the specification (page 4, lines 30-33). For the current office action it is these equations that will be used in the following rejections.

Claim 24 currently states, "each carrier has an opposite cantilevered balancer placed in the geometrical plane of *this* carrier." It is unclear as to which carrier is being referred to by "this carrier."

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With respect to claim 28, this claim currently is dependent under independent claim 17. Claim 28 presents further limitations regarding, "each first pair of adjacent parallel drive shafts." However, there is never any prior mention of a pair of drive shafts. Furthermore, claim 17 only requires a singular drive shaft, and fails to discuss subsequent drive shafts.

With respect to claim 31, it is unclear as to whether the two axially spaced coaxial drive shafts are in addition to the already required two drive shafts ala claim 26 or if the claim 26 drive shafts are to be positioned to be axially spaced and coaxial. Additionally, it is unclear as to which of the drive shafts that the one carrier is to be placed in the axial space of.

As claims 25, 29-30 and 32 are dependent upon claims 24 and 31, they are deemed indefinite for the same reasons discussed above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 17-20 and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Malkin (US 6,278,419).

With respect to claim 17, Malkin discloses, a stroboscopic display device (fig. 1) including:

- a rotary drive which has an output shaft (col. 4, lines 19-27),
- at least one carrier of point light sources (10 in fig. 1), the carrier is cantilevered (col. 4, lines 4-14) onto said shaft (20 in fig. 1) of the rotary drive and formed as a rod which has its;
 - shape corresponding to an appropriate revolution body generatrix (cylinder in this instance),
 - thickness commensurable with the cross-section of a point light source (clear from fig. 1), and
 - width, measured radially, which is sufficient for the carrier to illusorily disappear from the vision field of a spectator when gyrated (also seen as disclosed in fig. 1, by the limited thickness of 10);

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a plurality of point light sources arranged on the external surface of said carrier (12 in fig. 1);

the optical axis of each said light source is perpendicular to the revolution body generatrix, which is formed by a selected shape of said carrier (clear from fig. 1, that the light sources are perpendicular to the carrier, also see fig. 5);

a control means on the basis of a microprocessor to control said point light sources (60 in fig. 2; col. 4, lines 36-44); the control means comprising a sensor (14 in fig. 1) to signal said carrier position (col. 4, lines 54-67), a synchronizer (col. 6, lines 3-9) to synchronize the operation of light sources, and program means to record and process the data to be displayed and generate commands to cut in and out said light sources (floppy disk and microprocessor; col. 5, lines 46-47; col. 7, lines 9-32 for example).

With respect to claim 18, Malkin discloses, the device according to claim 17 (see above) wherein;

the thickness m of the carrier is defined by the expression: $d_{pls} < m \leq 9d_{pls}$ where d_{pls} is the cross-section of the light-emitting surface of a point light source (seems clear that fig. 1 defines a thickness that is certainly falls in this range);

the width B of the carrier is determined by the expression: $B \leq 0.1R_{max}$ where R_{max} is the radius of the circle described by the point light source, which is maximally distanced from the axis of the drive shaft (this again seems quite clear from fig. 1 that the width of the carrier is less than one-tenth of the radius).

With respect to claim 19, Malkin discloses, the device according to claim 17 (see above) that has in the geometrical plane of said carrier a balancer cantilevered onto the rotary drive shaft oppositely to the carrier (note the oppositely placed columns of light sources, each pair constitutes a balancer and a carrier).

With respect to claim 20, Malkin discloses, the device according to claim 19 (see above), wherein said balancer is formed as a carrier shaped correspondingly to an appropriate revolution body generatrix and furnished on its exterior with point light sources associated with said control means (each column of light sources, 10 in fig. 1, is shaped correspondingly and furnished with exterior point lights).

With respect to claim 22, Malkin discloses, the device according to claim 17 (see above), wherein the geometrical plane situated with respect to the geometrical plane of said carrier under the angle ϕ selected from a range of $0^\circ < \phi < 180^\circ$ there is cantilevered on the drive shaft at least one additional carrier shaped correspondingly to an appropriate revolution body generatrix, which has exterior point light sources associated with said control means (col. 6, lines 25-31; discloses, that each of the aperture, 22, will contain a pixel column).

With respect to claim 23, Malkin discloses, the device according to claim 22 (see above), wherein said main and the said additional carriers are shaped and dimensioned identically (clear from fig. 1) and placed with angular spaces approximately aliquot to 45 (as disclosed, Malkin proposes 64 equidistant carriers, col. 6, lines 25-31. $360/64 = 5.625$. $5.625 \times 8 = 45$. As such each carrier would be spaced apart by an angle, 5.625, that is aliquot to 45).

With respect to claim 24, Malkin discloses, the device according to claim 22 (see above), wherein each carrier has an opposite cantilevered balancer placed in the geometrical plane of this carrier (it should be clear from fig. 1 and the previously cited portions of Malkin that each carrier has an identical carrier exactly opposite it).

With respect to claim 25, Malkin discloses, the device according to claim 24 (see above), wherein each balancer is shaped correspondingly to an appropriate revolution body generatrix and exteriorly furnished with point light sources associated with said control means (clear from fig. 1).

7. Claim 17 is rejected under 35 U.S.C. 102(e) as being anticipated by Remitz (US 6,433,761).

With respect to claim 17, Remitz discloses, a stroboscopic display device (fig. 6) including;

a rotary drive (29 in fig. 6), which has an output shaft (25 in fig. 6),

at least one carrier of point light sources (21 in fig. 6) the carrier is cantilevered onto said shaft of the rotary drive (rotatable board, 23 in fig. 6) and formed as a rod (clear from fig. 6) which has its;

shape corresponding to an appropriate revolution body generatrix (cylinder in this instance),

thickness commensurable with the cross-section of a point light source (clear from fig. 6), and

width, measured radially, which is sufficient for the carrier to illusorily disappear from the vision field of a spectator when gyrated (col. 9, lines 7-17);

a plurality of point light sources arranged on the external surface of said carrier
(22 in fig. 6);

the optical axis of each said light source is perpendicular to the revolution body
generatrix, which is formed by a selected shape of said carrier (clear from fig. 6, that the
light sources are perpendicular to the carrier);

a control means on the basis of a microprocessor to control said point light
sources (fig. 5; col. 9, lines 4-5, 44-46); the control means comprising a sensor (light
detector in fig. 6) to signal said carrier position (col. 8, lines 62-65), a synchronizer (col.
9, lines 42-46) to synchronize the operation of light sources, and program means to
record and process the data to be displayed and generate commands to cut in and out
said light sources (fig. 5; col. 9, lines 46-63).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Malkin
(US 6,278,419) in view of Bricker (US 3,738,035).

With respect to claim 21, Malkin discloses, the device according to claim 19
(see above).

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Malkin does not expressly disclose wherein the main carrier and/or the balancer are additionally furnished with point light sources on their interior, which face the drive shaft axis.

Bricker discloses, a rotating display device having several plastic columns (56 in fig. 1) which when illuminated directs light inward (note the rays in fig. 5) to face the drive shaft axis (48 in fig. 1).

Bricker and Malkin are analogous art because they are both from the same field of endeavor namely, rotating illuminating display devices.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include light sources to emanate light inwards on the carriers of Malkin as taught by Bricker.

The motivation for doing so would have been for the increased visually appearance (Bricker; col. 3, lines 1-5).

Therefore it would have been obvious to combine Malkin with Bricker for the benefit of improved visually appearance to obtain the invention as specified in claim 21.

10. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Remitz (US 6,433,761) in view of Yuen et al. (US 5,041,947).

With respect to claim 26, Remitz discloses, the device according to claim 17 (see above), wherein additional drive shafts spaced apart from one another have at least one cantilevered carrier shaped correspondingly to an appropriate revolution body generatrix (fig. 5). Remitz does not expressly disclose, wherein the first drive shaft and additional drive shaft are rotationally synchronized together by a synchronizing means.

Yuen discloses, two space apart drive shafts (approx. 60 and 60' in fig. 12) , which are rotationally synchronized together (col. 6, lines 12-20) by a synchronizing means (belts in fig. 12).

Yuen and Remitz are analogous art because they are both from the same field of endeavor namely, rotating display devices comprising a plurality of LED's.

At the time of the invention it would have been obvious to one of ordinary skill in the art to synchronize the additional drive shafts of Remitz, with drive belts as taught by Yuen.

The motivation for doing so would have been the obvious advantage of ensuring that both of the drive shafts are turning at the same rate, thereby allowing them to act in concert with each other.

Therefore it would have been obvious to combine Yuen with Remitz for the benefit of ensured synchronicity to obtain the invention as specified in claim 26.

With respect to claim 27, Yuen and Remitz disclose, the device according to claim 26 (see above).

Yuen further discloses, wherein the said first drive shaft and at least one additionally drive shaft are associated with a common motor by a synchronizing transmission (note the common motor 21 in fig. 12).

11. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Remitz (US 6,433,761) in view of Lewis et al. (US 2,293,990).

With respect to claim 28, Remitz discloses, the device according to claim 17 (see above).

Remitz does not expressly disclose, wherein each first pair of adjacent parallel drive shafts is synchronized in phase and placed with the space A.

Lewis discloses a pair of adjacent parallel drive shafts (each 13 in fig. 2) that are synchronized in phase (col. 3, lines 47-51, discloses, that the fig. 2 rotations need to be identical) and placed with the space A defined by the expression:

$$A < \max R_i + \max R_{i+1}$$

where $\max R_i + \max R_{i+1}$ is the sum of radii of circles described by the light sources maximally distanced from the axes of the corresponding drive shafts (Clear from fig. 2, that the two circumferences overlap in the middle; also see col. 2, lines 3-11).

Remitz and Lewis are analogous art because they are both from the same field of endeavor namely, rotating, illuminated advertising displays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to increase the number of rotating drive shafts of Remitz and place them as taught by Lewis.

The motivation for doing so would have been to allow a larger display surface, as well as to continually change the displayed colors (Lewis; col. 1, lines 15-20).

Therefore it would have been obvious to combine Lewis with Remitz for the benefit of a larger display area to obtain the invention as specified in claim 28.

With respect to claim 29, Remitz and Lewis disclose, the device according to claim 28 (see above).

Lewis further discloses, more than two parallel drive shafts each shaft having carriers shaped and situated identically in initial angular positions (fig. 6).

Allowable Subject Matter

12. Claims 30-32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nobile et al. (US 5,057,827) discloses, a rotating display with LEDs along carriers. Molinaroli (US 6,265,984) discloses, a rotating display with LEDs along various sides of a carrier (fig. 5). Le et al. (US 5,450,094) discloses a rotating matrix of LEDs with an opposing counterweight. Tokimoto et al. (US 5,670,971) discloses, a pair of rotating columns containing LEDs on the outside edge (fig. 8). Tokimoto et al. (US 5,202,675) discloses another embodiment of a pair of rotating columns (fig. 19). NakaMats (US 6,249,998) discloses, a plurality of rotating carriers containing LEDs (fig. 9). Jang (US 6,577,286) discloses yet another display unit having a rotating disc with a column of LEDs affixed to it. Klawitter et al. (US 5,269,719) discloses a pair of rotating discs each having LEDs disposed thereon.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William L. Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

2/2/07

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